

6/84

**L.I.S.T. Group**LONG ISLAND  
SINCLAIR TIMEX  
GROUP

Centerport, N.Y. 11721

L.I.S.T.ING**I. MEETING NOTES - JUNE 3, 1984**

A longish 4 hour meeting at Idle Day Drive involved:

- a) Paul D. tried to log on to compuserve but, while we could get in, the password (which doesn't show on the screen when typed) must have been mistyped and the system threw us out. Rather than hold up the meeting (or run up the phone bill) we gave up after 3-4 tries. Rest assured, the MD-2 Modem and ZCOMM do work.
- b) Nazir P. showed us his translation of the ZX Spectrum arcade game "Galaxoids" (Public Domain) and the numerous changes in ROM calls, particularly the use of the "blank" portion of the Spectrum ROM, which were necessary to adapt it to the 2068.
- c) Paul D. demoed "Transylvanian Tower", a Spectrum adventure-maze game sent to us for review by Richard Shepherd software. A considerable amount of work (detailed inside) was necessary to get even this BASIC program to run.
- d) Rich B. demoed Vu-file from Psion and its included "Gazetteer" program. Speed seems comparable to Tom Woods Pro/file, but formatting may be a little more rigid.
- e) FIRSTLOADR - ZX81 upload program from SYNTAX, was tried several times, without success. Heinz H. feels his "smoother", to be demoed next meeting, may be the answer. Volume setting is clearly critical.
- f) Group purchasing was discussed, but little consensus or advantage was found.
- g) A discussion of "piracy" (read theft) lead to a unanimous voice vote that such was against group policy, the possible exception being companies which have folded. More discussion next time.

**II. NEXT MEETING IS SCHEDULED FOR 7 JULY (SATURDAY) AT 3:00PM**

Location: 9 Dartmoor Drive, East Northport - Call 368-9088 for directions, ask for Heinz. Please bring any special software, hardware items you'd like to demo. Remember too, that many of us are tyros. That simple game program you wrote last year and which is now too slow or BASIC for you, may be ideal learning aid for the beginner (especially if you've documented it). Also, we have begun to create a "library" tape of public domain (or member donated) software and of course, would like to share such programs between members.

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Meeting Notes &amp; Index

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Your reviews, programs, comments, hardware projects, etc., are eagerly solicited for publication in LISTING.

Software Review  
(Transylvanian Tower)

2

Supplier/Supply notes, Misc.

2

Hardware Project:

Byte Back MD-2 - Brother EP44 Interface

3, 4

Spectrum BASIC program conversion

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LONG ISLAND SINCLAIR TIMEX GROUP

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## FOR BEGINNERS ONLY: FIRST LOADER

An outstanding achievement by David Ornstein and a great public service by SYNTAX, FIRSTLOADER lets you upload your TS1000 BASIC programs to the 2068. Unfortunately, several of the beginners (and more advanced programmers too) have had trouble understanding, entering and/or using FIRSTLOADER. Based on the questions most frequently asked, we can offer the following tips:

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## BREAKING INTO THE TRANSYLVANIAN TOWER

Transylvanian Tower, by Richard Shepherd Software, is a 3-D MAZE adventure game written entirely in BASIC. The game begins with an external view of the "tower" and 1 brief introductory screens of instructions. To read the instruction booklet which comes with the cassette though, before beginning play. You'll get a chance to do this in the 2 minute delay, while the computer sets up the first (and each succeeding) maze.

The game is played on 5 levels of the tower, each level is an 8 X 8 maze of interconnected rooms, some of which hold treasures (e.g. a silver cross) and many of which hold deadly vampire bats. Your task is to proceed from the bottom or 1st level, where there are no treasures or bats, up through tougher and tougher challenges to level 5, kill Count Krespie and obtain his treasure.

In the first level, and in each succeeding one, you are presented with a line drawing showing 3 walls, ceiling and floor of the room in perspective. Doors, windows and objects are also represented. If there is a bat in the room, he will fly around the ceiling until you either kill him with your gun, or flee, or are killed by him.

The game is a very good example of what can be done with SINCLAIR BASIC and the Spectrum/TS 2068. The graphics are very good for BASIC and the pace is adequate, if slow during certain phases. Those slow phases are the two minute wait between levels and the agonizingly slow drawing of your situation map (which takes about 30 seconds).

The author has protected his software by jamming the machine stack, so don't try to break the program while it is running or you'll restart your machine. Note too, that the Spectrum version will not run on a TS 2068, without significant modifications (see companion article). We found the difficulty of the game on a whole adequate, although, firing your gun was not in the least bit convenient.

Overall I'd give it a rating of 7 out of 10. It is an impressive achievement for BASIC, but could have been better documented (e.g. the instructions don't tell you how to fire your gun-use the ZERO key). Its price - £5.95 (about \$11.00) is about right for the U.S. market and a reasonable value for the money.

Suppliers	Item	Cost
Best's	2068	\$98.32
47th St Photo	"	\$99.95
Timex	"	\$99.95 (No Tax)
Timex	TS1000/16K 50 50 FT	\$49.95
Zebra/Sunset	Modem	\$119.95
Fordham Radio	Joysticks (BP)	2/\$8.00
Radio Shack	26-1332 * Thermal Paper	2/\$1.95

- The data shown in Syntax (December 83) on page 14 is a translation table. The machine code (MC) program, (P15) which runs from 45000 to 45234, uses this table to convert ZX/TS code to its 2068 equivalent. That is, each number in the table is the CODE of one of the 255 characters you can use. Several characters are not directly translatable, and these have been replaced by "32" or a blank space. Check the character tables in the backs of both manuals for a comparison. Right now, CLEAR 43999 & NEW.
- To get these numbers into the computer, look at Fig.1 in this month's article on Transylvanian Tower. Lines 100 to 140 serve as a rudimentary INPUT routine which lets you put in 10 bytes at a time. If you GOTO 100, you'd be expected to put in a value for V. Enter 44000 for example, to begin entering data in the look-up table. The program will print the current memory location and wait for your input, 'x'. Again if you were just starting out, you would enter 32. Next you'd enter 130, 129 etc. ending with 143 (the 10th byte).
- Now to check what you've done so far, break into the program (or add a line-145 STOP) and GOTO 205. Again you'll be asked for a "Start". Enter 44000 and you'll see the bytes you just entered arranged just as they are in Syntax. The program will list 300 bytes (which can be changed by editing line 210), so at this each stage you may want to BREAK after you've seen what you want.
- Look at that listing. If any numbers were entered wrong, POKE the correct value directly. That is, if you see:  
44000 32 130 129 133 136  
You know the 4th value is wrong (it should be 131). So now, in immediate mode, POKE 44003, 131.
- Repeat the process of steps 2 through 4 until you reach 44253. Next, enter the actual machine language program by going to 100 and letting v = 45000. Fill any excess bytes with 0 or 201.
- Triple check the whole entry table and program by GOING to 205 (by the way, lines 10 to 40 and 300 are not needed in this application) and comparing what you have on the screen with the listing in Syntax. Correct any errors with direct POKES.
- SAVE "FIRSTLOADER" CODE a couple of times, for insurance. (You might even want to do this before step 6, just in case you mistype a POKE and crash the machine.)
- Now, cue up a ZX81 tape (use a 2K or less program for testing purposes) as described in Syntax. Volume is critical and about all I can tell you is that the program data should look like red and black lines in the border somewhat similar to the yellow and blue of a 2068 program in width. Too low or too high a volume will give nothing or just occasional flashes. Make sure there is no BASIC program in the machine when you RAND USR 45000.
- Enter RANDOMIZE USR 45000, play the tape, and wait for the 0 OK. Note that you can stop the process, anytime, by pressing the 'BREAK' key. Note particularly that Ornstein means just that key - not CapsShift and BREAK.
- Go through your program as described in Syntax, note changes required and SAVE it before you make them.

My first successful firstload was "Memory" a simple 2K Simon Says game from the Mixed Game Bag II tape. The only changes were to redefine variable X, the place to start in the character table, from 28 to 48 (line 140), change the "SAVE" line to add LINE for autorun and add OR a\$ = "y" to cover the lower case option for re-playing the game.

## MOONBUGGY:

Moonlander - line 630 the > sign should be < ?

## A CALL ABOUT A PARROT

John Cox called from the West Coast to find out more about RIST's Parrot. He couldn't get through to RIST, but fortunately, they had sent me a schematic. I told John what the missing chips and software on his second-hand kit version were and hope he does well in assembling it: IS RIST still in business?

\* Bob M. has one and is hooked up to the Source  
\* Thanks to Rich B for this tip.

# THE TOWER

Spectrum BASIC program conversion

Spectrum BASIC is much closer to ZX81 (TS1000), BASIC than that of the 2068 and it was this similarity, which enabled me to rework Transylvanian Tower (TT) for the 2068. TT is SAVED as CODE starting at 23552 for 36,500 bytes. The Spectrum uses the area from 23552 through 23755 to store the system variables and the BASIC program can begin anywhere after that. In this case, fortunately, BASIC begins at 23755.

Your TS 2068 on the other hand, while keeping system variables at 23752 through 23755 (though they differ in function after 23733), also has a number of other housekeeping chores tucked away in the 16-24K area. Most notable of these is the machine stack which normally sits (with one display file - mode 0) at 24576 to 25088. Other items, CHANS, etc. are also kept in this area, so having BASIC there is not such a great idea.

In order to find out how a BASIC program is configured, we need to look at that systems variables file. That is easy enough to do if we use the LOAD "" CODE STARTLOC, BYTES command. Here STARTLOC is the location we want the TS 2068 to start loading code into and BYTES is the number of bytes to load. If we don't know how long a program is we can leave BYTES blank.

For the purposes of examining the systems variables (203 bytes) and perhaps a little of the BASIC program then, we do the following:

1. CLEAR 28551 & NEW - This sets RANTOP to 28552 and leaves whatever we put above it isolated from the BASIC System.
2. LOAD "" CODE 28552 - which will load the tape into 28552 and beyond. To save time while experimenting, you might want to stop the tape after 30 seconds or so. The whole program won't LOAD, but you should get the first 1K bytes, more or less.
3. LOAD or type in at least lines 205 through 295 of the program shown in Fig.1. Then GOTO 205. You'll be asked for the starting address. Respond with 0 or 28552. The program will then list the code you just loaded, but will offset the effective addresses to reflect the locations the bytes originally had. Typical output is shown in Fig.2 (can be obtained either by COPYING the screen or OPEN #2, "P", GOTO 205, CLOSE #2).
4. Prepare a chart, like Fig.3, which lists the systems variables and calculate the values of the codes obtained in step 3. The really important addresses are ERR SP, LIST SP, virtually all the bytes from NEWPPC (23618) to NEM (23657), RANTOP 23730-1, and the CHANS data; 23618 to 23755. Remember that the values are stored LSB first. As an example, to find out where the program starts, let's investigate and use the variable PROG. (see PP 262ff of TS 2068 manual)
5. Calculate the value of PROG. From Fig.3 we see this is:

23635 contains LSB = 203	203
23636 contains MSB = 92 X 256 =	23552
PROGRAM STARTS AT	23755

Does it? Take a look at 28754. (offset 5000 from 23754) We see the 128 (80H) we are supposed to see before the program starts (see Page 255 of 2068 manual). Next comes:

0 1 77 0 244 50 etc.

Line numbers are stored in the normal way in 2 bytes, so the program starts at line #01. The next two bytes say the rest of the line is 77 bytes long. Look at 28836 (77 + the 4 bytes we've just looked at). We see code for line #2. You could interpret each byte of code to determine what the program does, but there is an easier way.

6. The PROG we've been looking at is really at 28635 and the actual value, under which the system is operating is at 23635. We know that the program begins at an 28755 so we can POKE that data into PROG and fool the system for a while. 28755 = 83,112 So:

POKE 23635,83  
POKE 23635,112

7. LIST your program. The very beginning of the first line is garbage like Fig.4, but you can figure out from Fig.2 or 3 what those few bytes were (in this case it was 01 POKE. Try COPY or L1IST if you want a more permanent record. You could now simply type in the program and, given that the author didn't enter any variables as direct commands, it would work. There is an easier way, however.

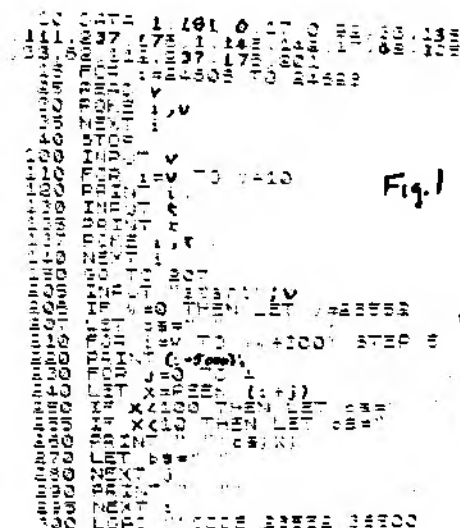


Fig.1

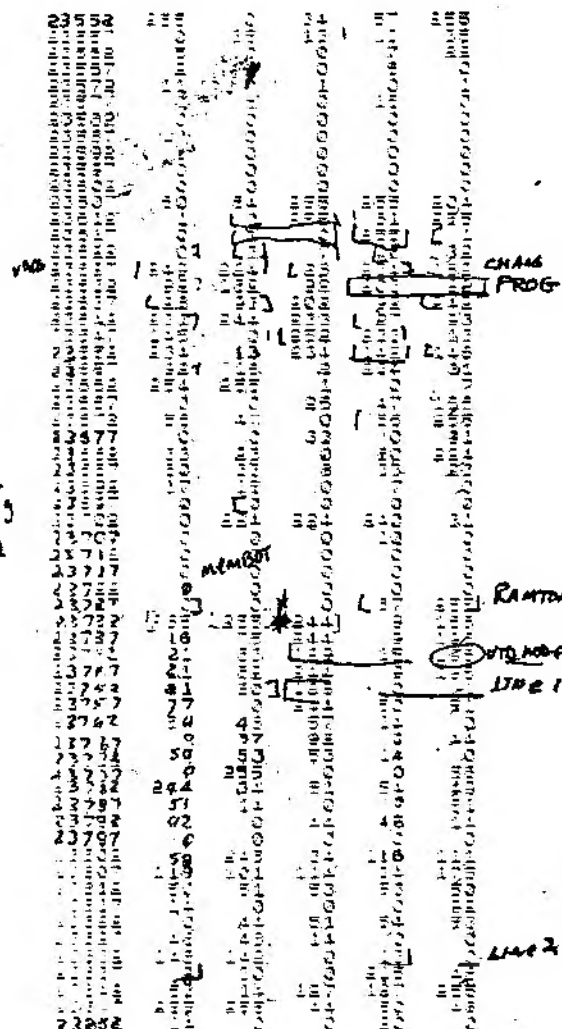


Fig. 2

The POKE 23613,0 lines, which mess up the error handling (e.g. causing a system reset when you try to "break" the program for example), can be replaced by POKE 23670,0 which is innocuous enough, and maintains program length or simply eliminated, if they are eliminated, the program becomes shorter and faster.

Fig. 4

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LLST. Group

TIMEX APPLICATION NOTE: INTERFACING WITH BROTHER'S EP44 TYPEWRITER

- EQUIPMENT REQUIRED:
- 1) TS 1000/ZX 81
  - 2) Byte Back MD-2 Modem with RS232 Port
  - 3) Brother EP-44 portable typewriter
  - 4) 14 pin dip header, wire & 25 PIN "D" connector

Brother's EP-44 hi-resolution, dot-matrix printer uses regular and/or thermal paper (up to 8 1/2" wide), can be battery operated and is a full function typewriter. It also has 4K memory for text and an RS-232 port. Priced between \$269 and 300, it is a good buy simply as a portable typewriter. With Byte back's MD-2 Modem/RS 232 port, the EP-44 can serve as your printer.

To make this connection, begin by removing the right hand cover plate of your MD-2 unit. Inside, you'll see the backward mounted 14 pin DIP socket shown in Fig. 3. The numbers on the pins are tricky because of this back-side mounting, so be particularly observant.

Assemble your interface cable using the pinouts shown in Figs. 1, 2, & 3. Only 3 wires (and possibly just 2) are needed for this interface, they are:

- 1) Ground-connect pin 7 of the DB 25 connector to pin 7 on your Byte Back board (use a DIP HEADER).
- 2) DATA TO THE PRINTER This means the Timex will be transmitting (pin 2) and the EP-44 will be receiving (pin 3 on DB-25)
- 3) EXTERNAL READY - CLEAR TO SEND - (In fact, we could probably dispense with this one or use RTS). External Ready (pin 20) on the printer tells the Timex's Clear to Send (pin 5 or DIP) that it is ready to listen to data.

Now plug in the EP-44 and MD-2 using your cable. Put the MD-2 on the back of a TS 1000, power up and LOAD or Key in the Byte Back software. Switch the EP-44 on and put it in terminal mode (OFF Line). Enter the configuration shown in Fig as the printer modes. The BASIC software listing supplied, free, by Byte Back was used to generate the character set and message shown below:

THIS IS TO INFORM YOU THAT

```
!"#$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMN
OPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~
```

As supplied, you can only use LPRINT, not LLIST & COPY. This also limits you to 32 characters per line for standard text. Byte Back has a program which will give you full features at \$29.95.

This system is easy to hook up and quite reliable. I don't know which RS-232 interface chips the Brother uses, but it appears quite rugged and flexible, as is the MD-2 modem. We only tested the EP-44 as a printer, but by connecting the remaining RXD and TXD lines and RTS, CTS, you could use the EP-44 as a "big keyboard".

Finally, though we've not 100% sure of this, it may even be possible to tap into the EP-44's 4K of CMOS, battery backed-up RAM. This means you could add 4K RAM and, have "almost" instant load software, as long as it was under 4K.

5-2-87

## ByteBack SINCLAIR TIME

EP-44 to be used as an output printer for personal computers.

### 1. CONNECTION



### 2. CONNECTING CONDITIONS

#### SINCLAIR TIME

BAUD RATE 100  
BIT LENGTH 7  
PARITY  
NEWLINE CR+LF  
CODE 9 BIT  
ER

#### EP-44

BAUD RATE 100  
BIT LENGTH 7  
PARITY  
NEWLINE CR+LF  
CODE 9 BIT  
ER



## ByteBack

### RS-232 Output Plug

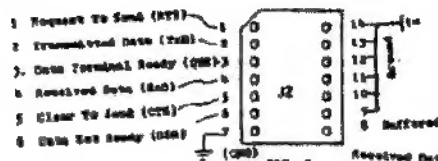


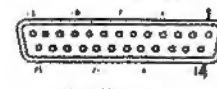
FIG. 3

Received Data Bytes

AS VIEWED FROM THE CONNECTOR SIDE OF THE BOARD  
NOTE: The board is on the back or elevable side of the board, but the pins are numbered as shown viewed from the front side.

### Connector and pin assignment

Terminal Number	Signal name	Color	EP-44 pin	Function summary	Note
2	Send Data	SD	—	Data line sent from this printer to computer terminal	
3	Receive Data	RD	—	Data line sent from computer terminal to this printer	
4	Request to Send	RS	—	Controls transmission of data. ON: carrier locked OFF: carrier drop	Normally ON in the command mode
6	Clear to Send	CS	—	Controls data transmission. ON: data transmission possible OFF: data transmission not possible	
8	Data Set Ready	DSR	—	Indicates condition of computer device. ON: transmission address complete or computer device OFF: transmission address not possible at computer device	ON when ready to receive
7	Signal Ground	SG	—	Provides local ground reference	
9	Carrier Sense	CS	—	Controls reception of data. ON: carrier locked OFF: carrier drop	On when data is received
20	External Ready	ER	—	Indicates condition of this printer. ON: printer operation completed OFF: printer operation not completed	Enables output setting control. ON when data is received



NOTE: Stand pinning

(1) Reception  
Reception is possible when DR and CS are ON; reception data is ignored at other times.  
If ER is set, ER line is ON when data can be received, but becomes OFF when busy (print buffer remainder is low and data cannot be received).

(2) Transmission

Data is transmitted when DR and CS are ON.

